Whittier Bridge
I-95 Improvement Project
Newburyport/Amesbury/Salisbury

www.mass.gov/mhd/whittierbridge

massDOT Highway

Stakeholder Meeting
12.07.09

ACCELERATED BRIDGE PROGRAM

The PB I-95 Team

- Prime Consultants
  - Parsons Brinckerhoff
  - TetraTech Rizzo
- Specialty Subconsultants
  - William Warner Architects and Planners
  - C&C Engineering – Bridge Preservation
  - Welch Associates Land Surveyors - Mapping
  - Applied Coastal Resource Engineers - Hydraulics
  - Normandeau Associates Inc. – Wetlands/Wildlife Resources
  - Public Archeology Laboratory – Historic Resources
  - Regina Villa Associates – Public Outreach
  - CME – Accelerated Bridge Construction

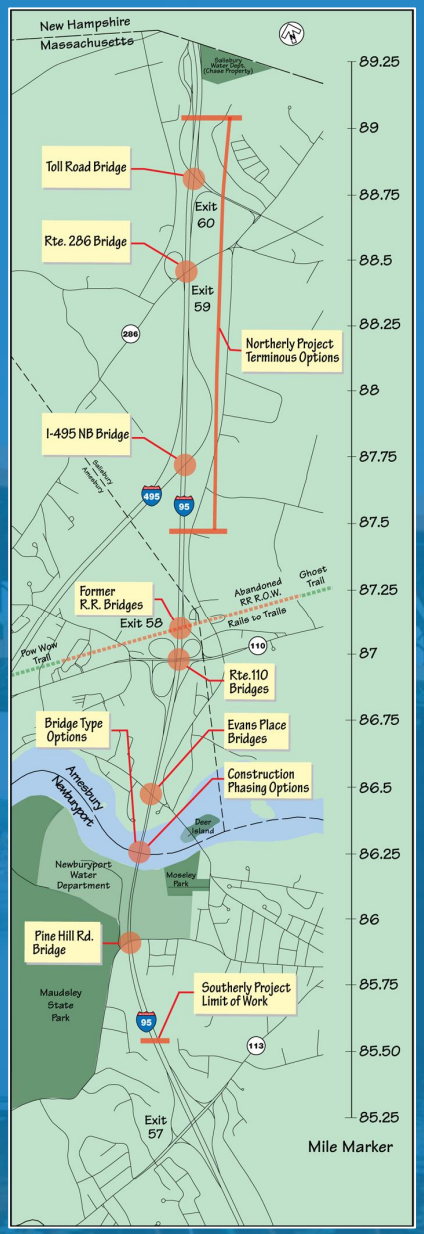
Project Description

MassDOT Proposes to Replace the Current Structurally Deficient John Greenleaf Whittier Bridge and Improve I-95 from Exit 57 (Rt 113) to Exit 59 (I-495)

- The 1951 main span is a double-barreled, 3-span continuous riveted steel through truss.
  - Structurally Deficient, Nearing End of Economic Life
    - Poor Structural Rating , Excessive Deterioration
    - Non-redundant Structure
  - Geometrically Deficient
    - Insufficient Number of Lanes
    - Non-conforming Shoulder Width
- Highway
  - Insufficient Number of Lanes
  - Exit 58 (Rt 110) Substandard Acceleration/Deceleration Lanes

Accelerated Bridge Program

- $3B commitment over 8 years
- Whittier Bridge is a key component of the MassDOT Accelerated Bridge Program (ABP)
- Goal to reduce the number of structurally deficient bridges over life of the program:
  - Remove Current Bridges from List and
  - Prevent Additional Bridges from Becoming Classified Structurally Deficient



Project Design Issues

- Bridge River Crossings Options Drive Project
  - Navigable Channels and River Hydraulics
  - Impact on Existing Bridge
  - ROW Constraints/Impacts
- Exit 58 (Rt 110)
  - Improvements
  - Crossing Rail Trail
- Northern Terminus Options
  - Lane Widening Terminus Options

MEPA Environmental Notification Form (ENF) Comments

- MEPA ENF Certificate – scope for the Draft EIR
- **18** letters received with approximately 150 individual comments
  - Mass Department of Environmental Protection
  - Massachusetts Historical Commission
  - Massachusetts Coastal Zone Management
  - Massachusetts Natural Heritage and Endangered Species Program
  - Mass Department of Conservation and Recreation
  - Massachusetts Audubon Society
  - Merrimack Valley Planning Commission
  - Town of Amesbury
  - City of Newburyport (multiple letters)
  - Town of Salisbury
  - Coastal Trails Coalition
  - 7 residents

Seven Major Areas of Comment

1. Justification of Need for Project
2. Alternatives Analysis to Identify Preferred Alternative
3. Analyze Impacts to River Navigation from Construction and New Bridge
4. Accommodation of bicycle/ recreational trails in project area
5. Stormwater Impacts
6. Rare Species Impacts
7. Wetlands Impacts

Major Areas of Comment in Detail

1. Justification of Need for Project
   - Bridge Replacement – document existing condition of bridge and whether rehabilitation is possible
   - Highway Widening – document need for additional lanes
2. Alternatives Analysis to Identify Preferred Alternative
   - Existing Bridge: Rehabilitation; Rehabilitation with Retrofitting; Retain Bridge with Adjacent New Construction
   - New Bridge: East; West; East-West; New 6-Lane Bridge
   - Highway: Widen Inside; Widen Outside; Widen to Rte. 110 Only
3. Analyze Impacts to River Navigation from Construction and New Bridge

Major Areas of Comment in Detail

4. Accommodation of bicycle/ recreational trails in project area
   - East – West Corridor to connect to Maudslay State Park
   - North – South connection across Merrimack River
   - Accommodate Connections to Existing Trails
5. Stormwater Impacts
   - Compliance with Stormwater Standards
   - Protection of Existing Drinking Water Supplies
6. Rare Species Impacts
   - Sturgeon
   - Bald Eagles
7. Wetlands Impacts
   - Demonstrate Need for Wetlands Variance if Necessary
   - Avoid Impacts if Possible

Purpose and Need

1. Address Structural Deficiency of the Existing Whittier Bridge
   - Current Structure has a poor structural rating
   - Feasibility of Rehabilitation is under review
2. Address Geometric Deficiency from Exit 57 to Exit 60
   - Lack of Shoulders on Whittier Bridge
   - Highway Capacity impacted by insufficient lanes
   - Exit 58 – On and Off Ramps

Rehabilitation Assessment

- Rehabilitation Feasibility Assessment Report is in Development

Affected Environment

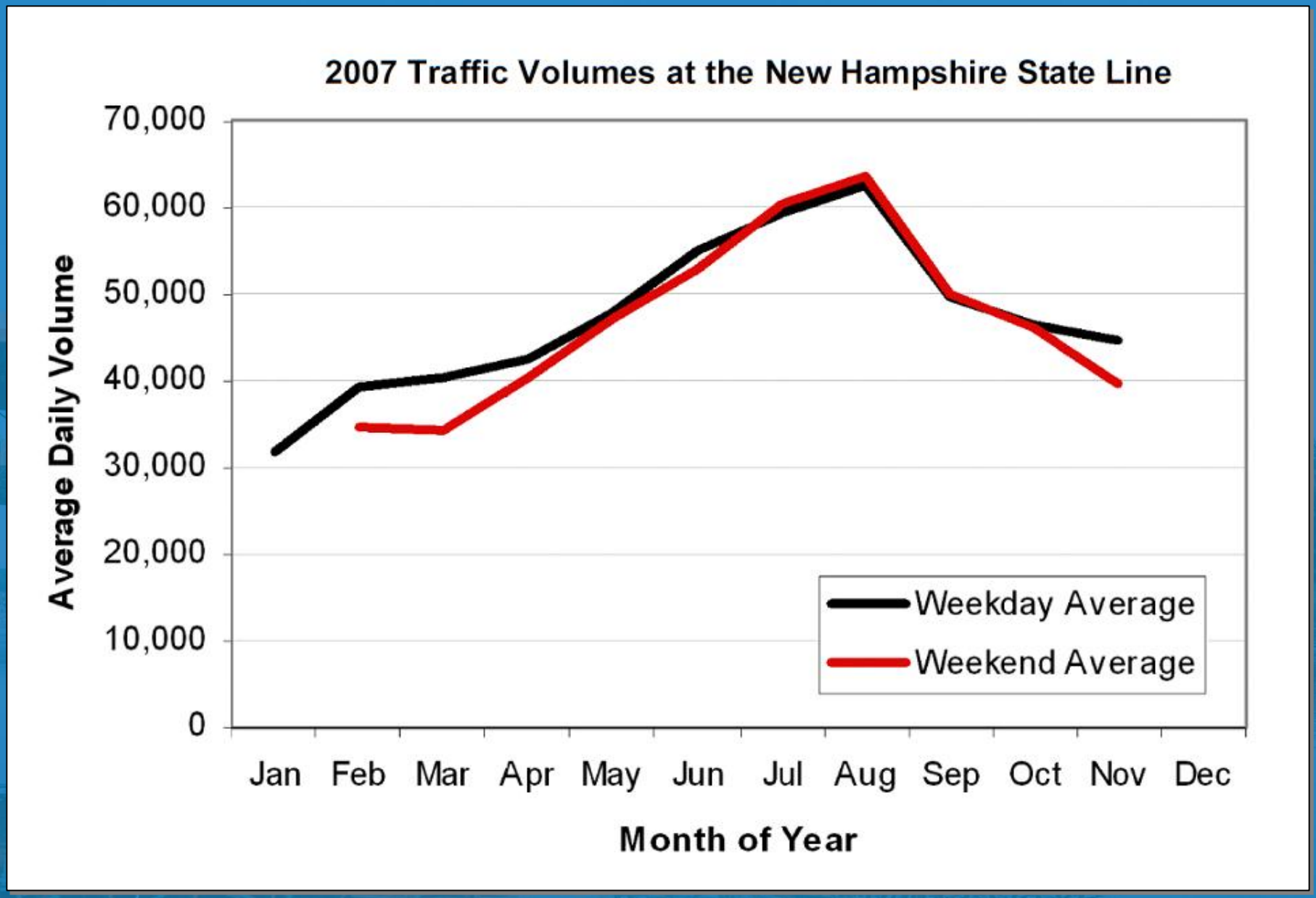
- Cultural Resources Documented
- River Hydraulics is Being Modeled
- Wetlands Delineated and Under Local Review
- Stormwater Impacts Under Review
- Water Supply Protection Zones Mapped
- Noise Baseline Data Obtained
- Air Quality Model is Underway

Design is Driven by Weekend Traffic Volumes

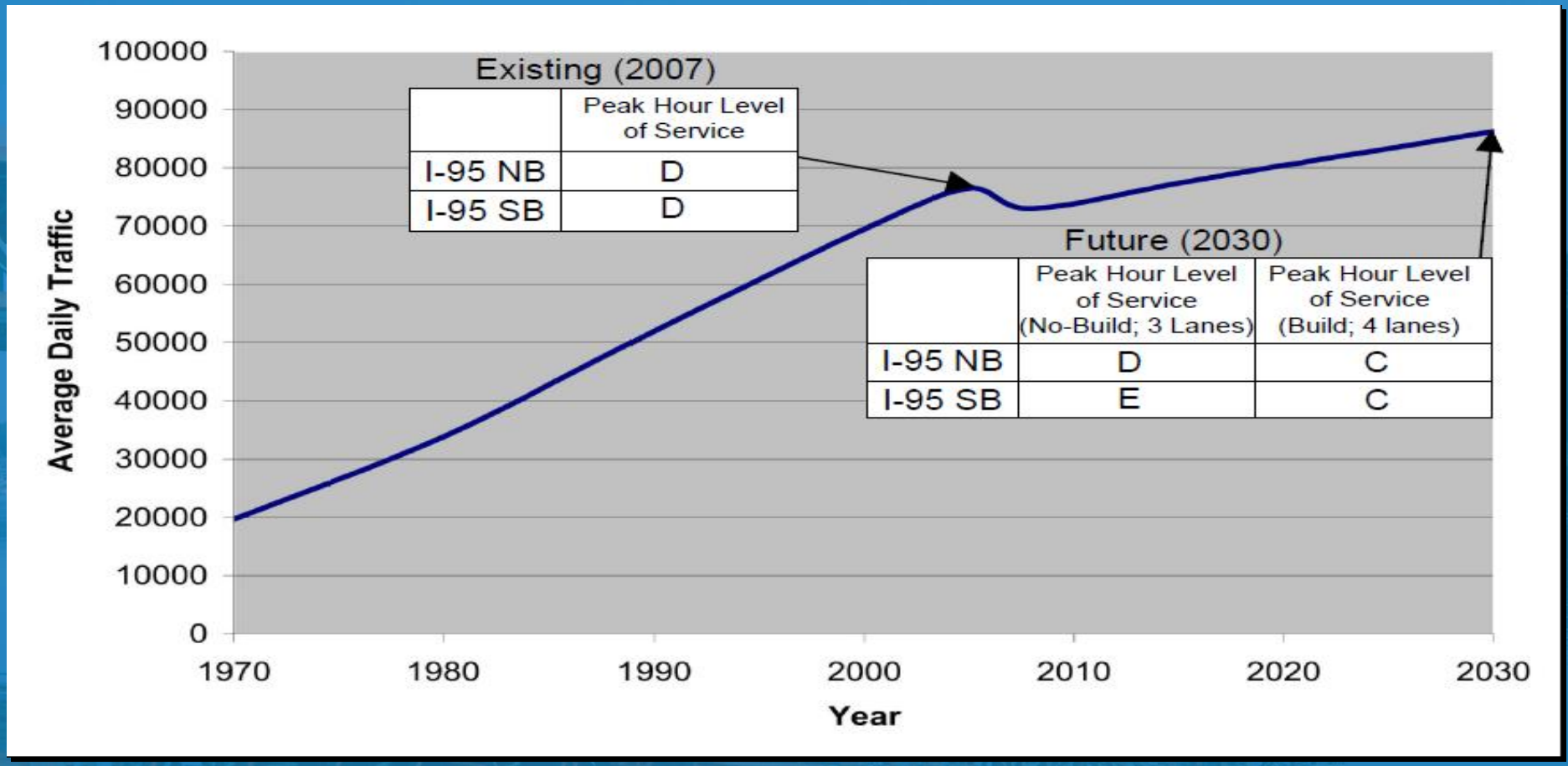
	1	2	3	4	5	6
	Weekday AM Peak Hr (Tues-Thurs) Volume	# of Hrs in Week Exceeding (1)	Mon AM Peak Hr Volume	Sun Peak Hr Volume	Ratio of Max (3,4):1	For July, Aug, Oct, Ratio of Max (3,4) that month: 1 of April)
I-95 SB @ NH SL						
April 2007 (4th Week)	3461	8	3470	4781	1.4	-
July 2007 (3rd Week)	3507	28	4108	6435	1.8	1.9
August 2007 (2nd Week)	3437	37	4163	6324	1.8	1.8
October 2007 (3rd Week)	3532	8	3753	5641	1.6	1.6
I-95 SB N of Rte 110						
April 2007 (4th Week)	2470	6	2485	3042	1.2	-
July 2007 (3rd Week)	2319	21	2625	3924	1.7	1.6
August 2007 (2nd Week)	2294	25	2647	3953	1.7	1.6
October 2007 (3rd Week)	2370	10	2473	3614	1.5	1.5

Design Level of Service (LOS)

	Type of Area and Appropriate Level of Service			
Highway Type	**Rural Level**	**Rural Rolling**	**Rural Mountainous**	**Urban and Suburban**
Freeway	B	B	C	C
Arterial	B	B	C	C


2007 Traffic Volumes at the New Hampshire State Line
Average Daily Volume
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month of Year
Weekday Average
Weekend Average

Historic Traffic Growth on Whittier Bridge



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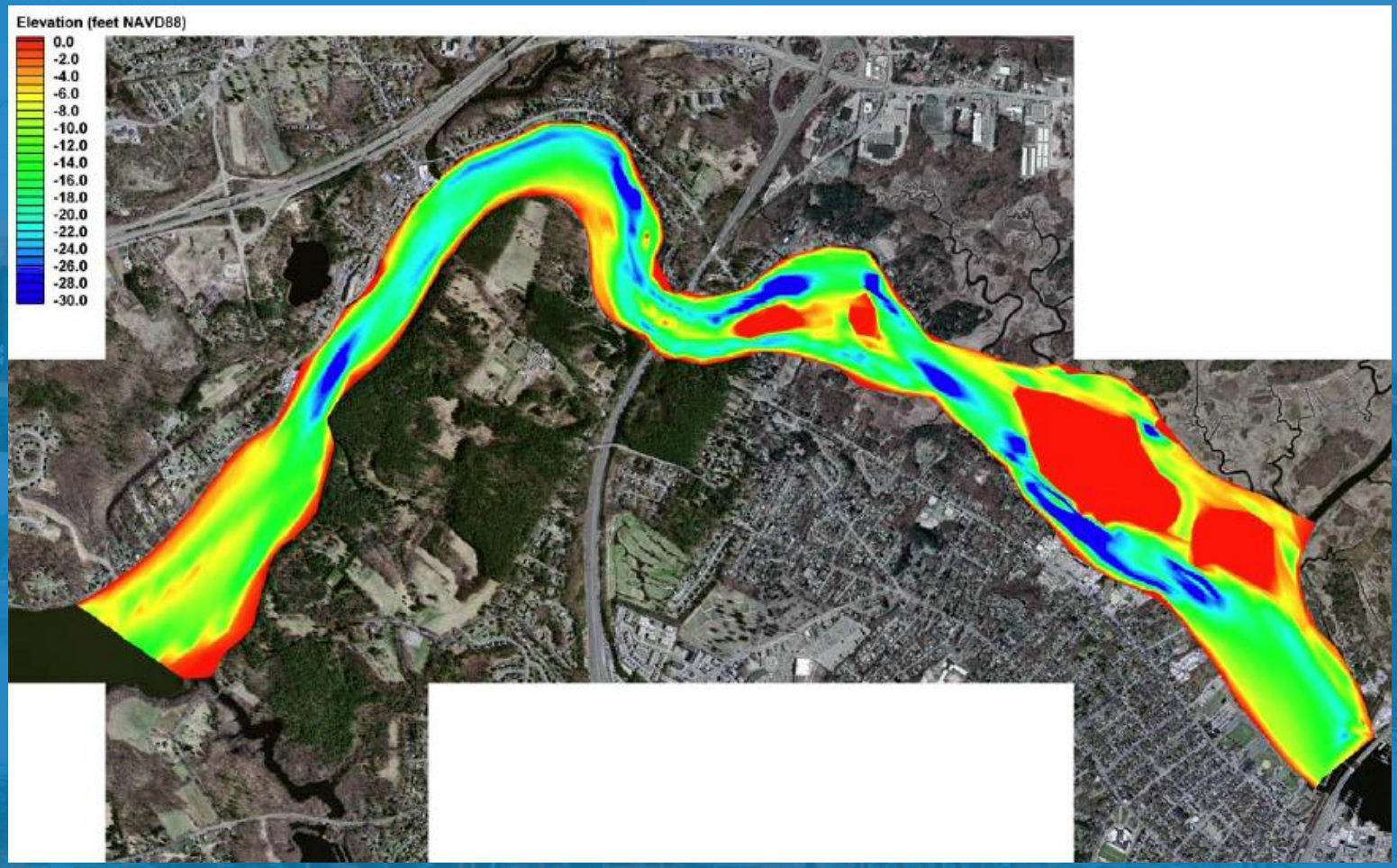
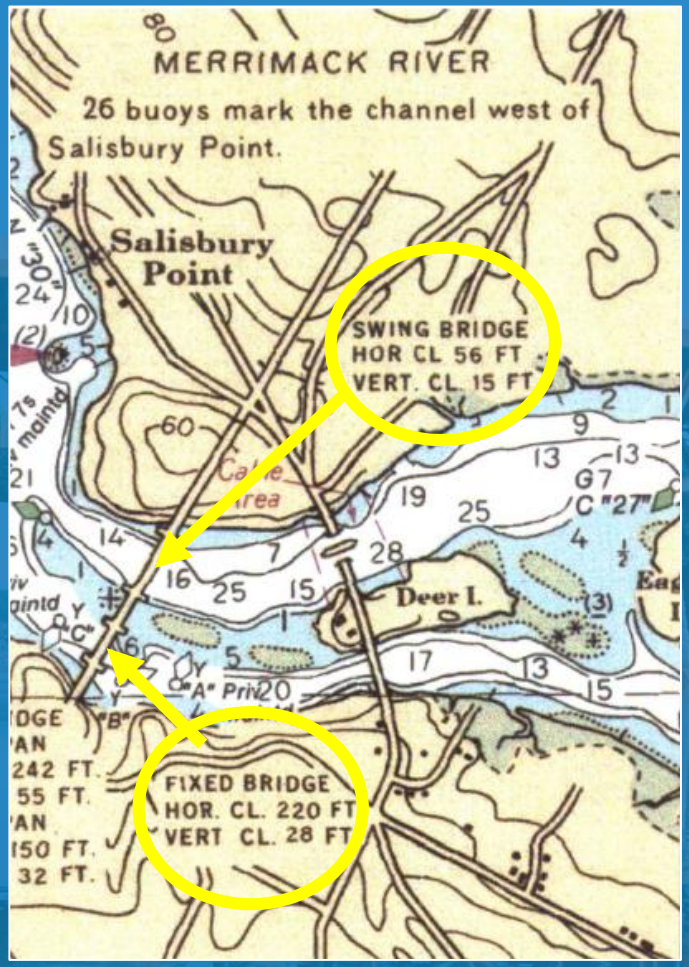
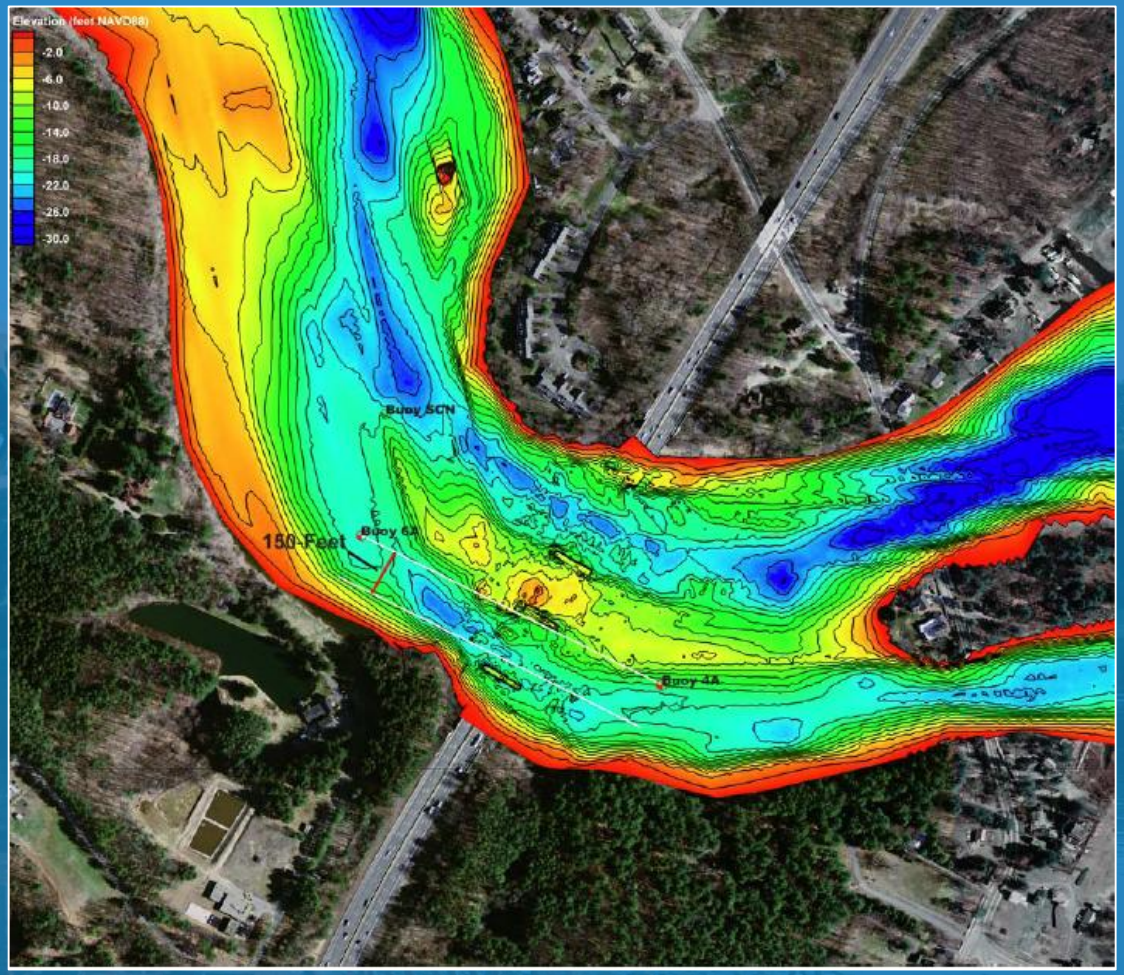
ACCELERATED BRIDGE PROGRAM

Hydraulics Study Area

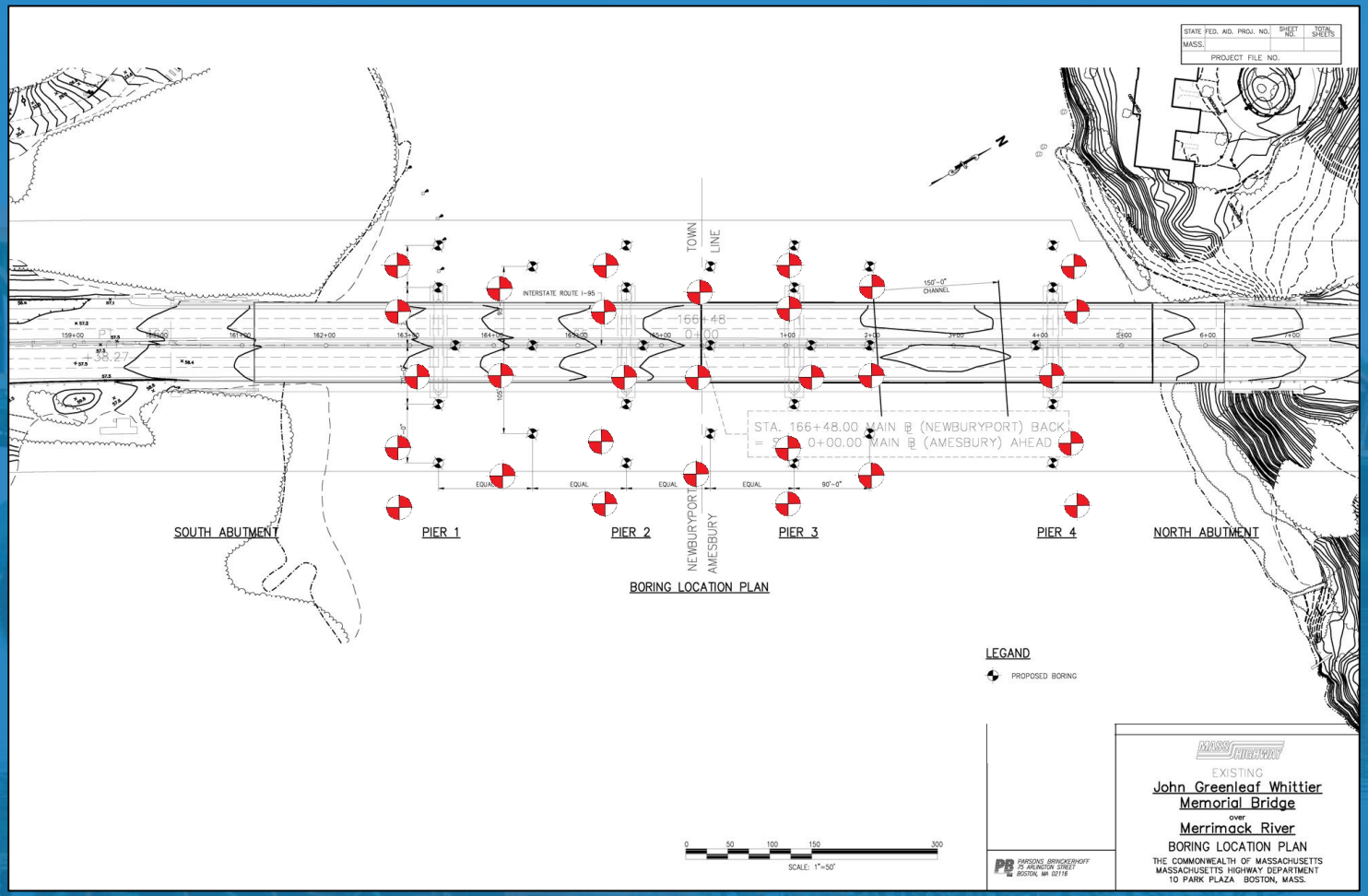


Navigation Channels/Bathymetry





River Boring Locations



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ACCELERATED BRIDGE PROGRAM

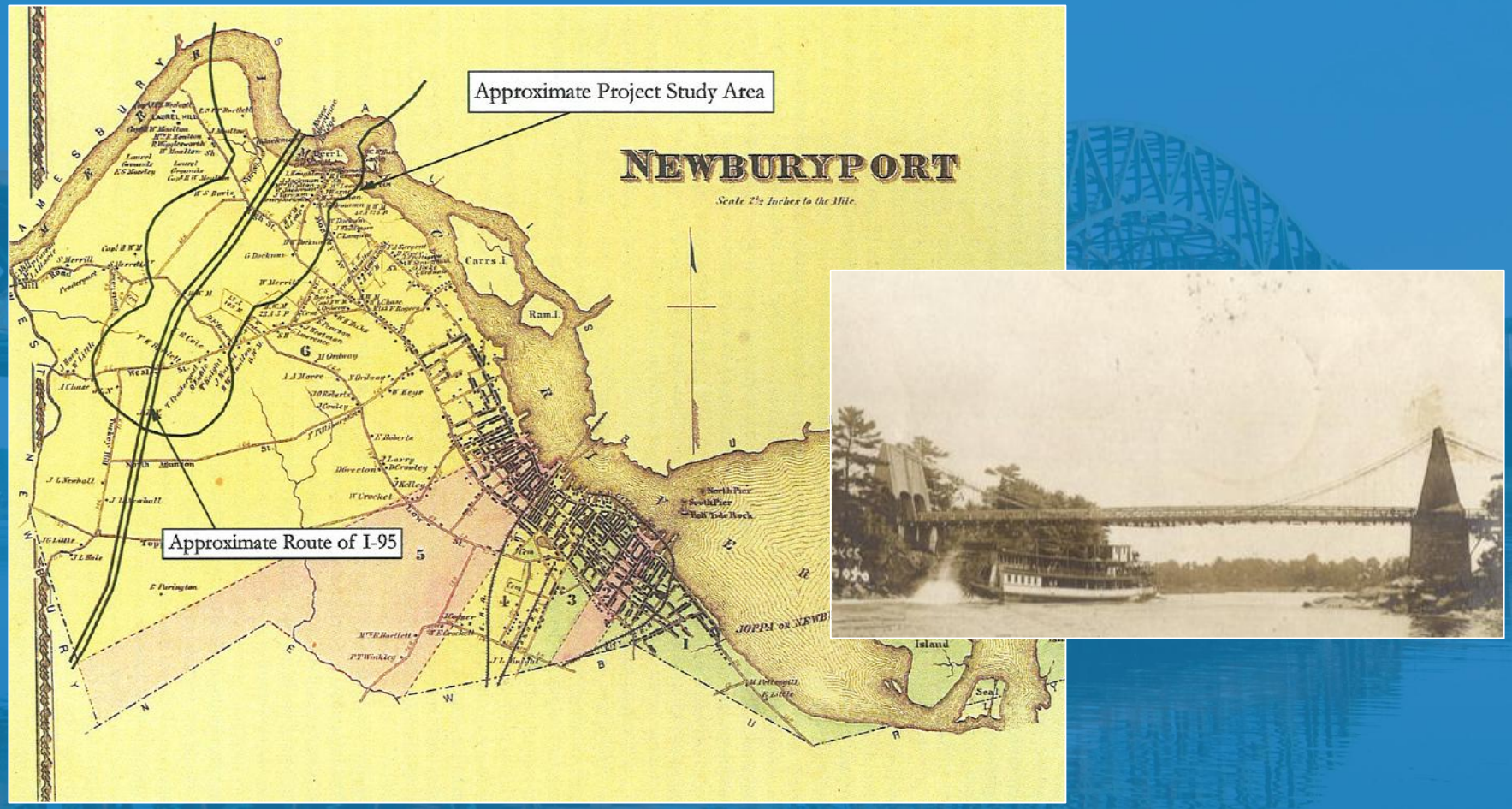
Marine Borings

Core Samples

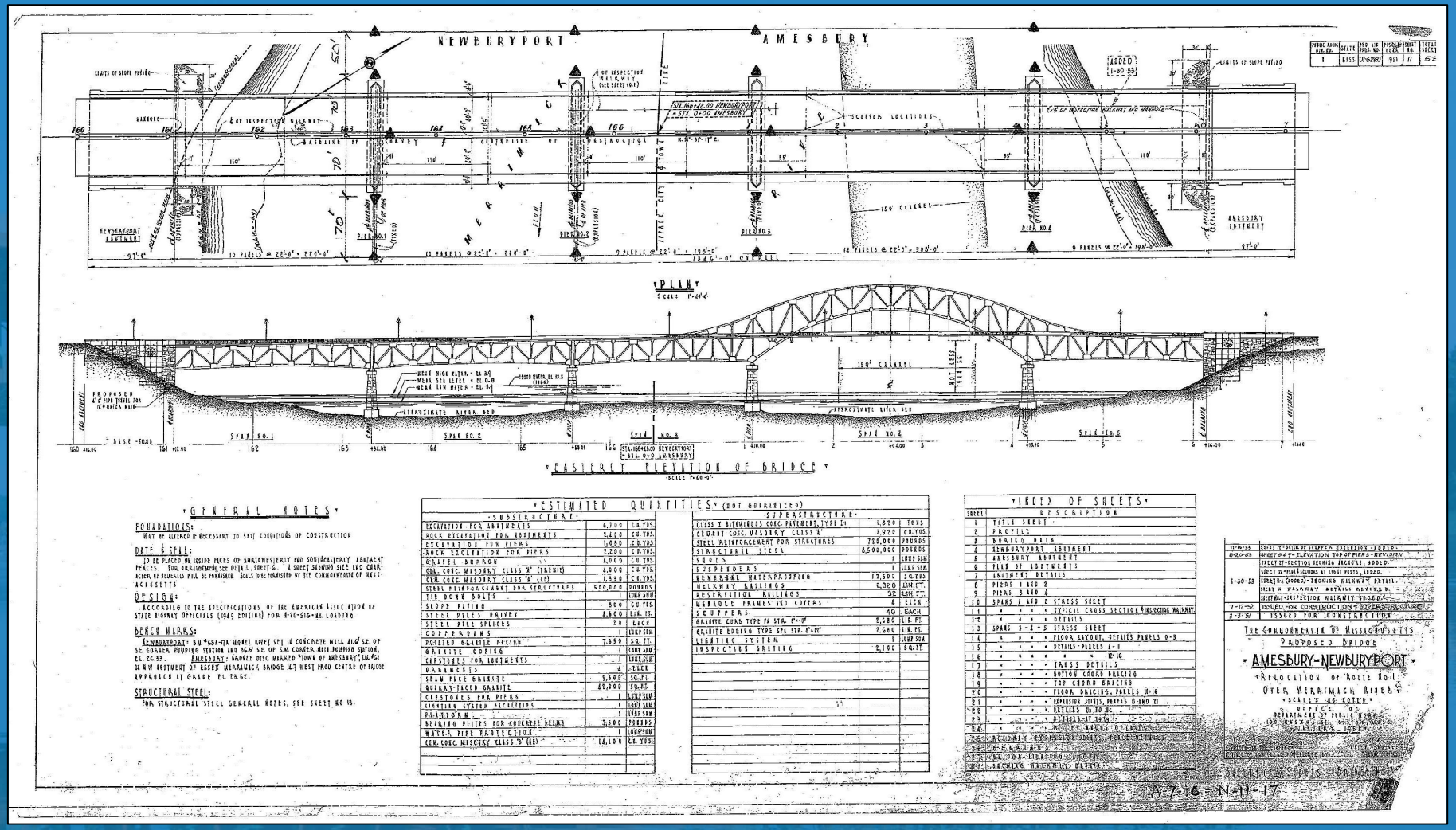
BORING LOCATIONS

BORING	DATE START	DATE FINISH	STATION	OFFSET	AS-DRILLED COORDINATES (GPS) N	AS-DRILLED COORDINATES (GPS) W	MUDLINE Depth/Elev	TOP OF ROCK Depth/Elev	ROCK CORED	Core Runs (REC/RQD) C-1	C-2	C-3	C-4	C-5	NOTES
P1-1	10/19/2009	10/19/2009	163+34	120 ft. LT.	42°50'3"	70°54'45"	-19	8.5-9' of soil overburden	20'	70/24	93/58	97/81	97/88	-	Elevation Pro using USGS/iPhone 3GS compass
P1-2	10/14/2009	10/14/2009	163+34	70 ft. LT.	42°50'02"	70°54'44.4"	-20.6	4-5' of soil overburden	20'	87/81	95/84	100/99	47/48	-	Garmin GPS
P1-3	10/29/2009	10/29/2009	163+46	0 ft.			EL -19.5	EL -22.0	13'	82/8	88/30		-	-	
P1-3A	11/12/2009	11/12/2009	163+65	0 ft.	42°50'3"	70°54'45"	EL -18.0	EL -20.0	20.1'	92/83	74/28	75/23	97/38	79/0	Station and offset? (See log)
P1-4	10/22/2009	10/23/2009	163+34	70 ft. RT.	42°50'1"	70°54'43"	EL -21.1	EL -22.1	20'	100/75	97/81	100/75	98/88	-	Iphone 3GS compass, high tide - casing for EL
P1-5	10/21/2009	10/21/2009	163+34	140 ft RT	42°50'02"	70°54'43"	EL -20.1	EL -22.1	20'						
P1.5-1	10/9/2009	10/11/2009	164+46	95 ft. LT.	42°50'03.3"	70°54'44.5"	~EL -22.9	~EL -23.4	20'						
P1.5-2	10/22/2009	10/22/2009	164+46	0 ft.	42°50'3"	70°54'44"	EL -22.4	EL -23.4	19'						
P1.5-3	10/29/2009	10/29/2009	164+46	105 ft. RT.	42°50'02.3"	70°54"	EL -20.5	EL -25	20'						
P2-1	10/16/2009	10/16/2009	165+58	120 ft. LT.	42°50'04"	70°54'44.3"	EL -11.3	EL -14.6	20'						
P2-2	11/16/2009	11/16/2009	165+58	70 ft. LT.	42°50'03.9"	70°54'43.1"									
P2-3	10/30/2009	10/30/2009	165+70	0 ft.	42°50'06.2"	70°54'44.2"	EL -13.6	EL -20.1							
P2-4	10/20/2009	10/21/2009	165+58	70 ft. RT.	42°50'03.1"	70°54'41.1"	EL -15.9	EL -21.9	20'						
P2-5	10/19/2009	10/20/2009	165+58	140 ft RT	42°50'03"	70°54'40.6"	EL -20.6	EL -28.6	20'						
P2.5-1	11/2/2009	11/2/2009	0+10	95 ft. LT.	42°50'05.2"	70°54'43.2"	EL -9.85	EL -11.4	20'						
P2.5-2	11/13/2009	11/13/2009	0+10	0 ft.			EL -7.4	EL -7.9	20'						
P2.5-3	10/29/2009	10/26/2009	0+10	105 ft. RT.	42°50'4"	70°54'41"	EL -10	EL -27.5	20'						
P3-1	11/3/2009	11/3/2009	1+10	120 ft. LT.	42°50'05"	70°54'43.1"	EL -19.1	EL -19.35	20'						

Historic Resources Reconnaissance Survey



Historic Resources



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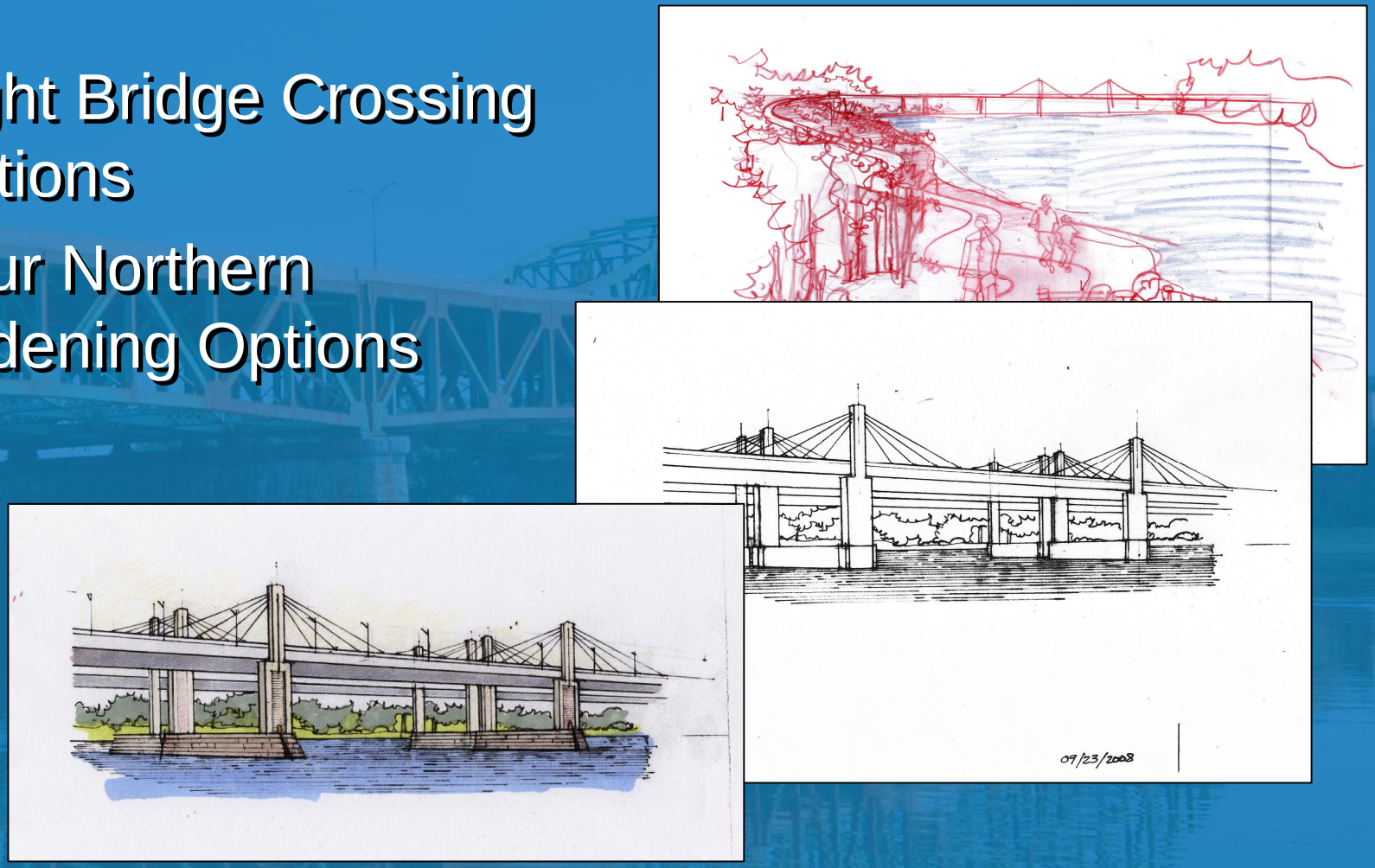
Options Development

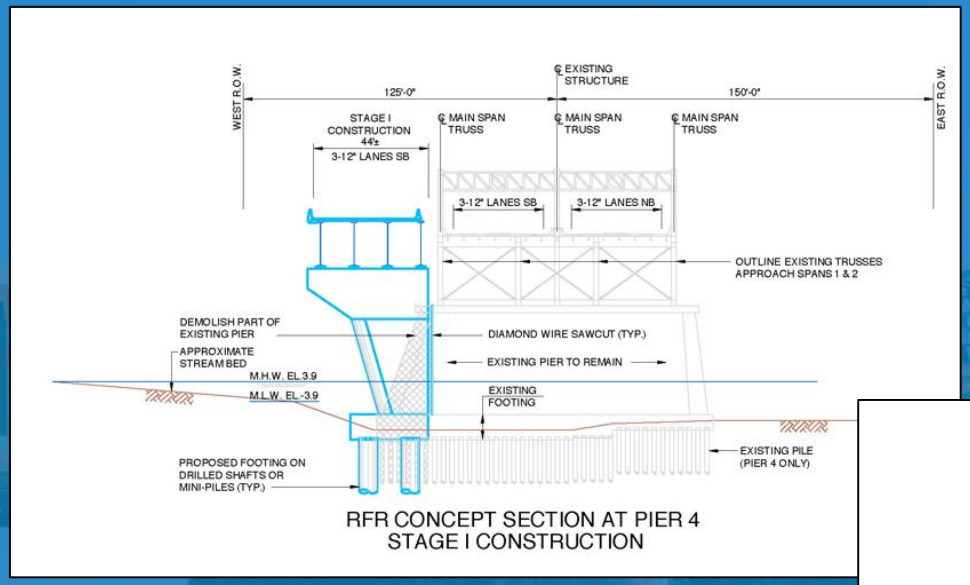
- Eight Bridge Crossing Options
- Four Northern Widening Options



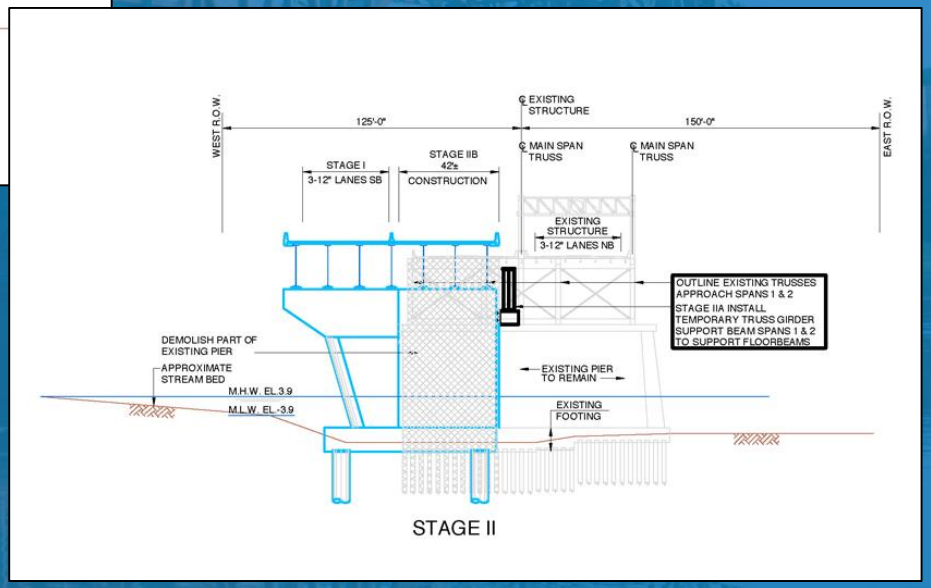
Defined Bridge Alternatives

- Bridge
  - » Progressive
  - » No Build Existing Condition
  - » Rehabilitation
  - » Retrofit with Adjacent Structure
  - » New 3 Lane Bridge
  - » East-West
  - » East
  - » West

Progressive Staging Option

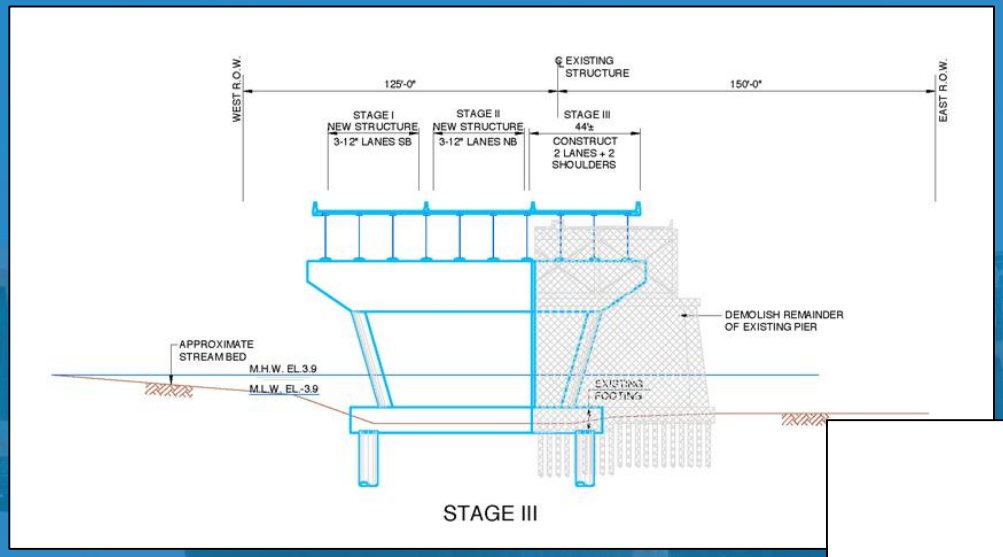


RFR CONCEPT SECTION AT PIER 4
STAGE I CONSTRUCTION

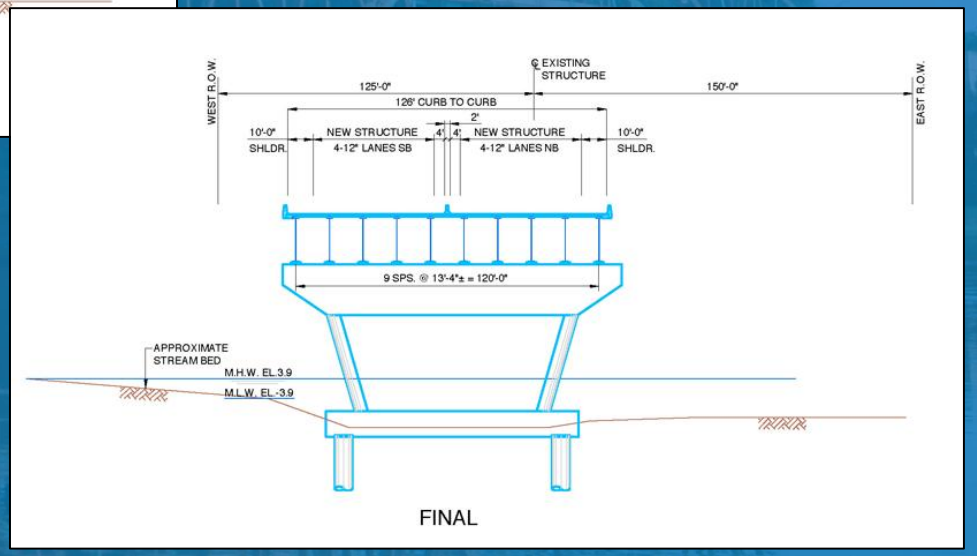


STAGE II

Progressive Staging Option

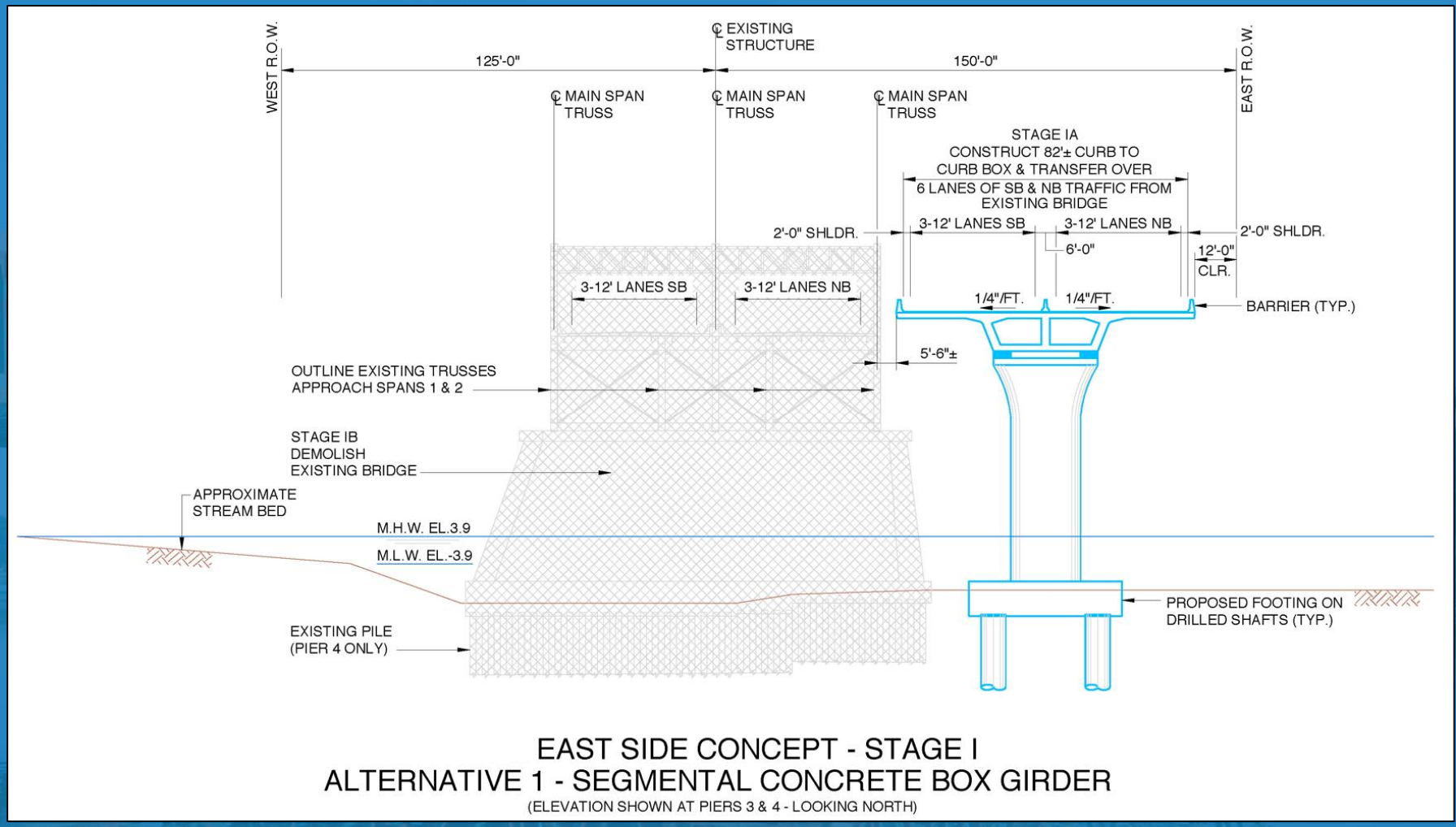


STAGE III



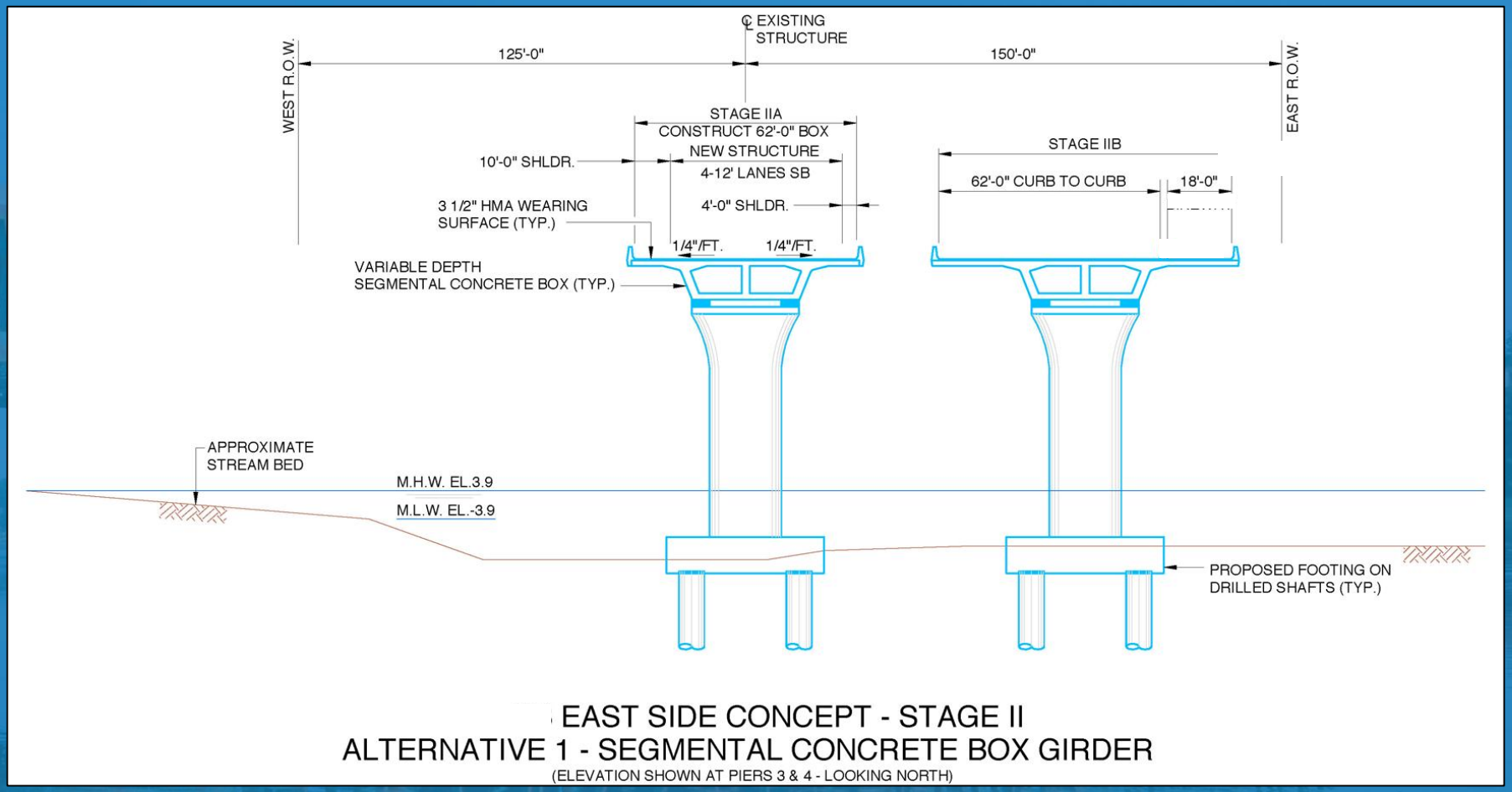
FINAL

Segmental Concrete



EAST SIDE CONCEPT - STAGE I
ALTERNATIVE 1 - SEGMENTAL CONCRETE BOX GIRDER
(ELEVATION SHOWN AT PIERS 3 & 4 - LOOKING NORTH)

Segmental Concrete



EAST SIDE CONCEPT - STAGE II
ALTERNATIVE 1 - SEGMENTAL CONCRETE BOX GIRDER
(ELEVATION SHOWN AT PIERS 3 & 4 - LOOKING NORTH)

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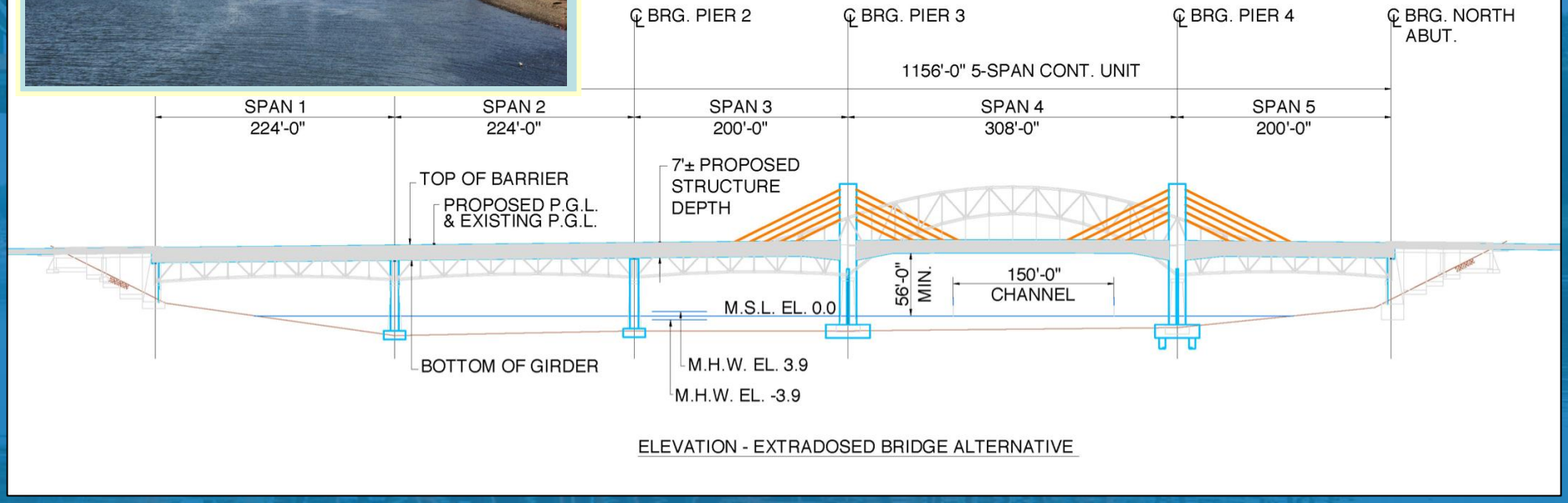
Extradosed



ELEVATION - EXTRADOSED BRIDGE ALTERNATIVE

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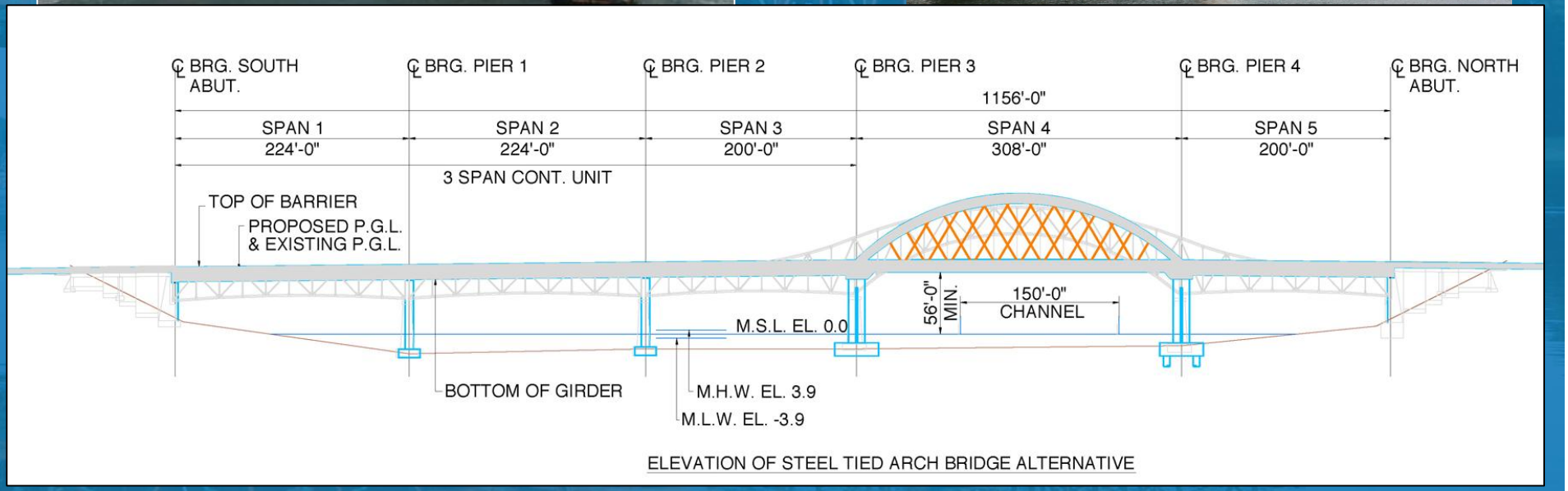
Steel Tied Arch



ELEVATION OF STEEL TIED ARCH BRIDGE ALTERNATIVE

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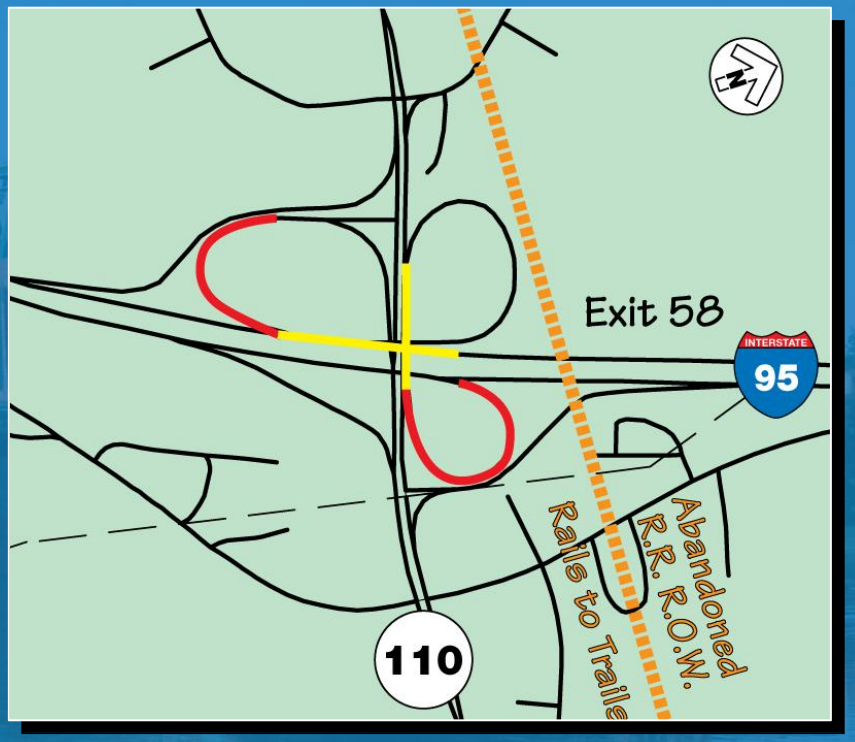
Defined Highway Alternatives

- Highway Widening
  - Inside
  - Outside
  - Inside NB/Outside SB
  - Outside NB/Inside SB
  - Early Termination at Exit 58 Northern Terminus to Route 110

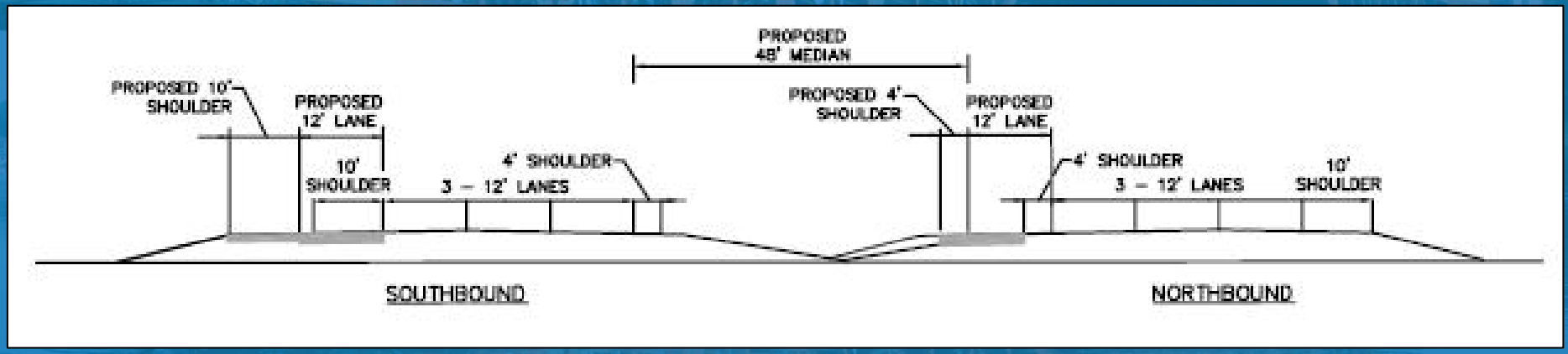
I-95 Widening - Inside vs. Outside

- NB and SB Treatments Can Differ
- Take Advantage of 60ft. Wide Median
- Minimize Impacts to Route 110 Ramp Terminals
- Horizontal Curve Location
- Bridge Pier Constraints



I-95 Widening - Inside vs. Outside

- NB and SB Widening Options
  - Widen NB Inside & SB Outside
    - Benefits Tie to the Northern Terminus options



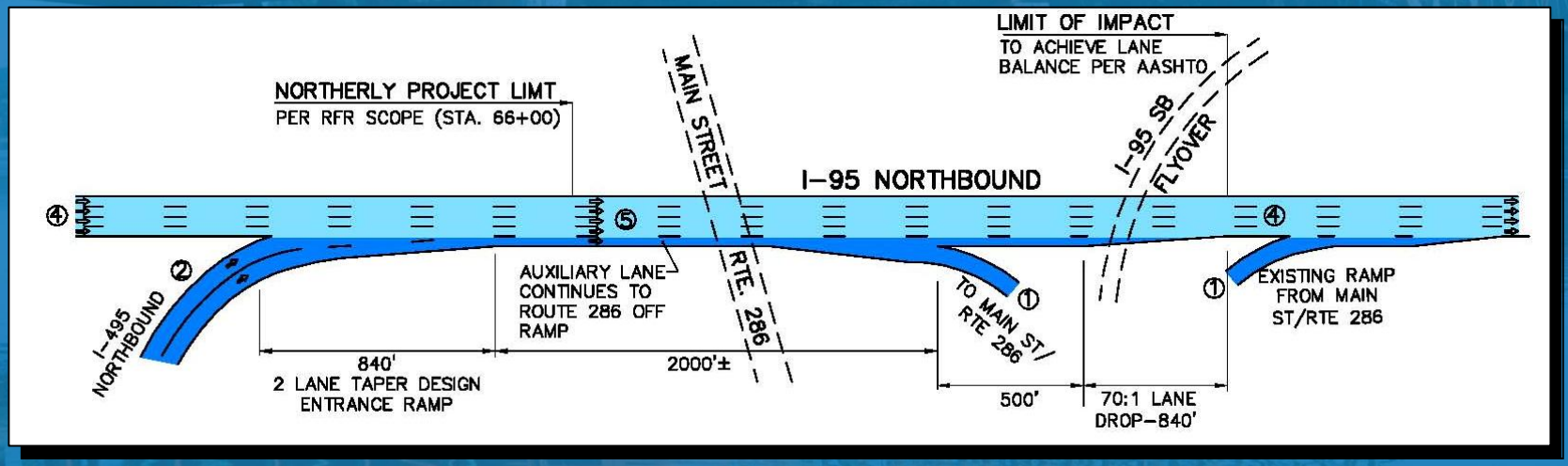
Northerly Terminus
Exit 60

- NB Widening Limits are More Complex Than SB
- Lane Balance NB at I-95/I-495
- Several Options Investigated
- Keep Limits in Check

I-95N at I-495 Overpass

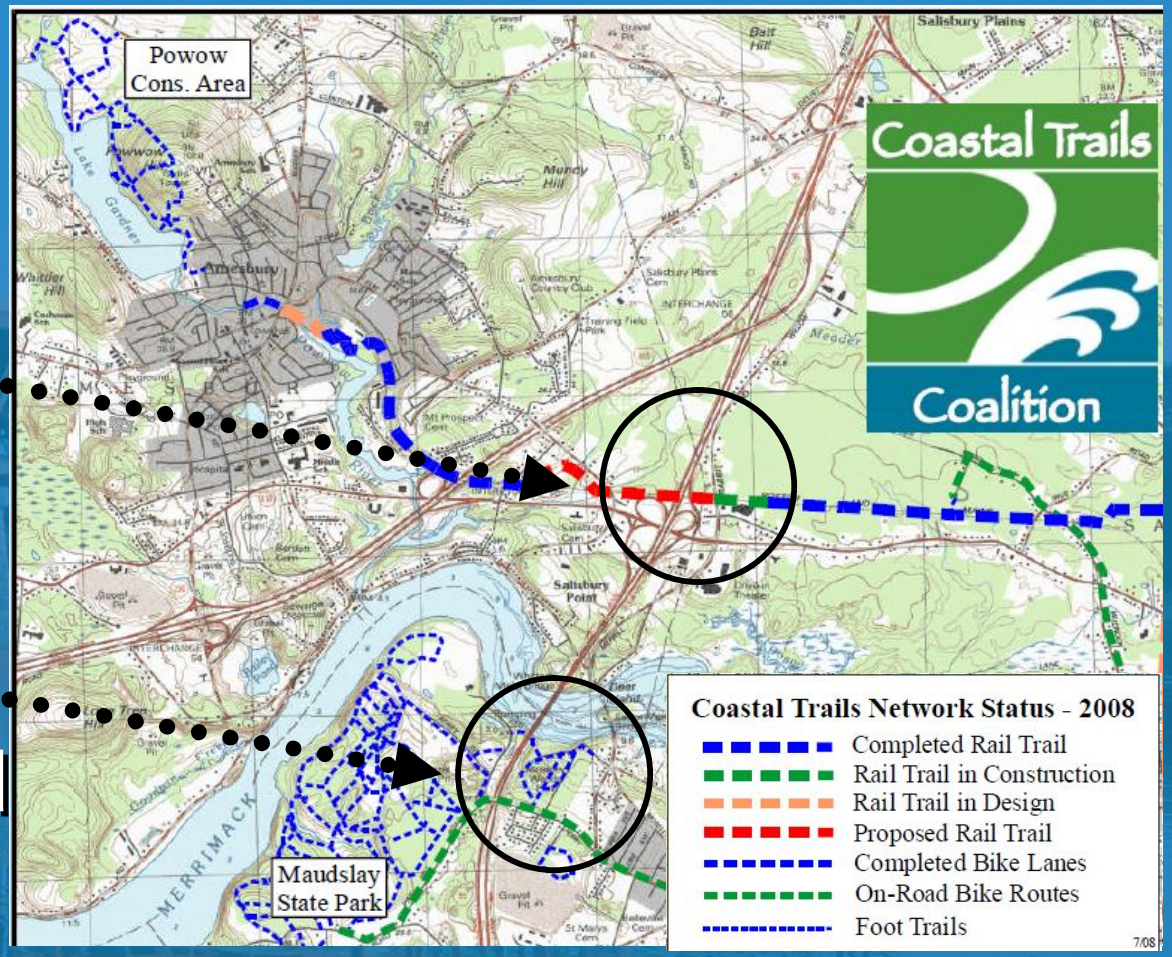
Northerly Terminus

- Option 1
  - Maintains 4 Lanes NB Through I-495 Merge
  - Complies w/Lane Balance Principles
  - Adds Auxiliary Lane Between Interchanges
  - Potentially Impacts Several Bridges



Existing & Planned Trails by Coastal Trails Coalition

- Ghost Trail
- East-West connections at Mosley Woods and Pine Hill Rd



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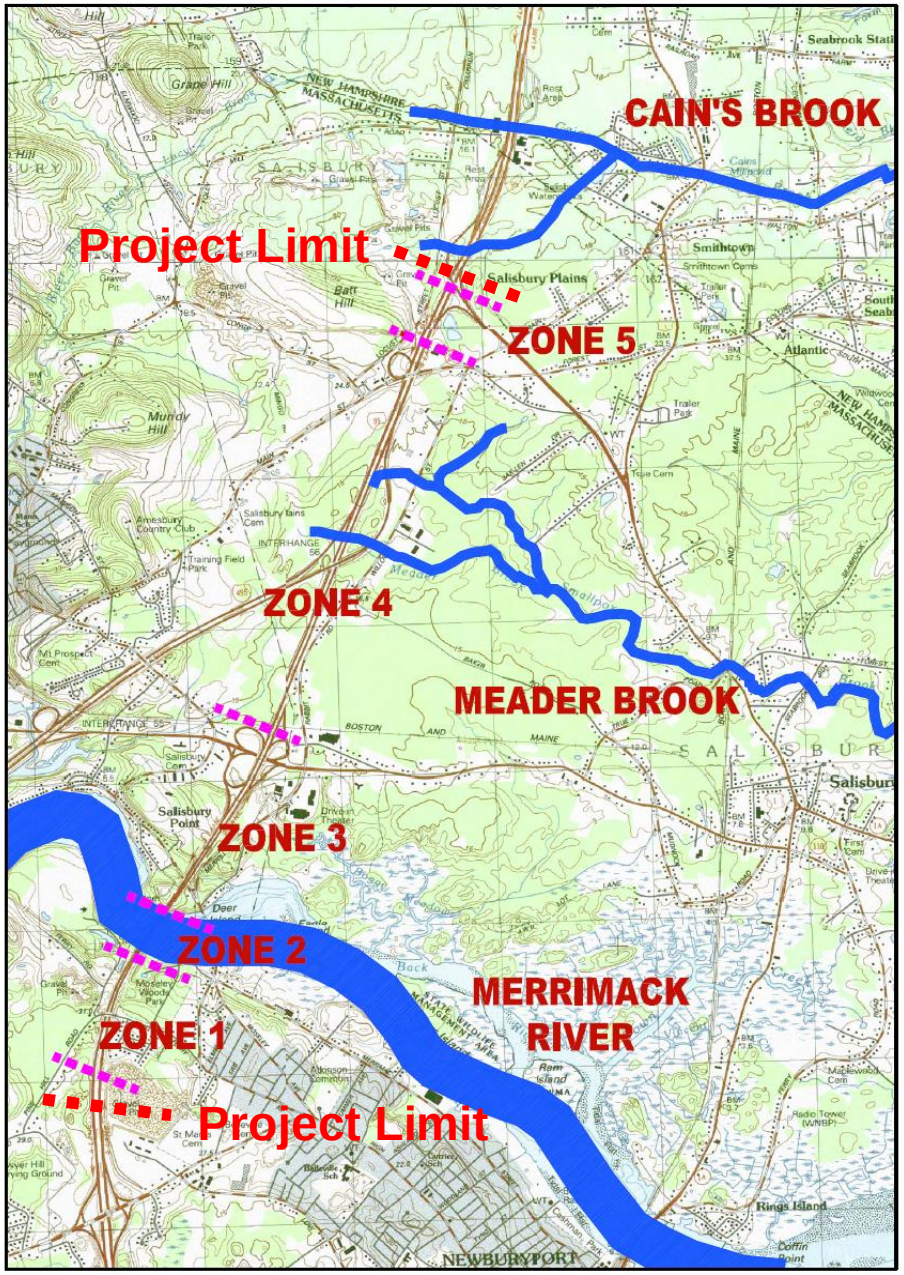
ACCELERATED BRIDGE PROGRAM

Watersheds

- **Drainage Zone 1** – Directly tributary to the Merrimack River, 1 - 30” outlet south of the River.
- **Drainage Zone 2** – Bridge, Tributary to the Merrimack River
- **Drainage Zone 3** – Multiple outlets which discharge to BVW located on both sides of the existing alignment, tributary to the Merrimack River.
- **Drainage Zone 4** – Multiple outlets which discharge to BVW located on both sides of the roadway and are tributary to Meader Brook. There is a small section of roadway in the southern portion of Zone 4 which discharges to an unnamed stream on the west side of the southbound corridor and is tributary to the Merrimack River.
- **Drainage Zone 5** – Tributary to Cain’s Brook.

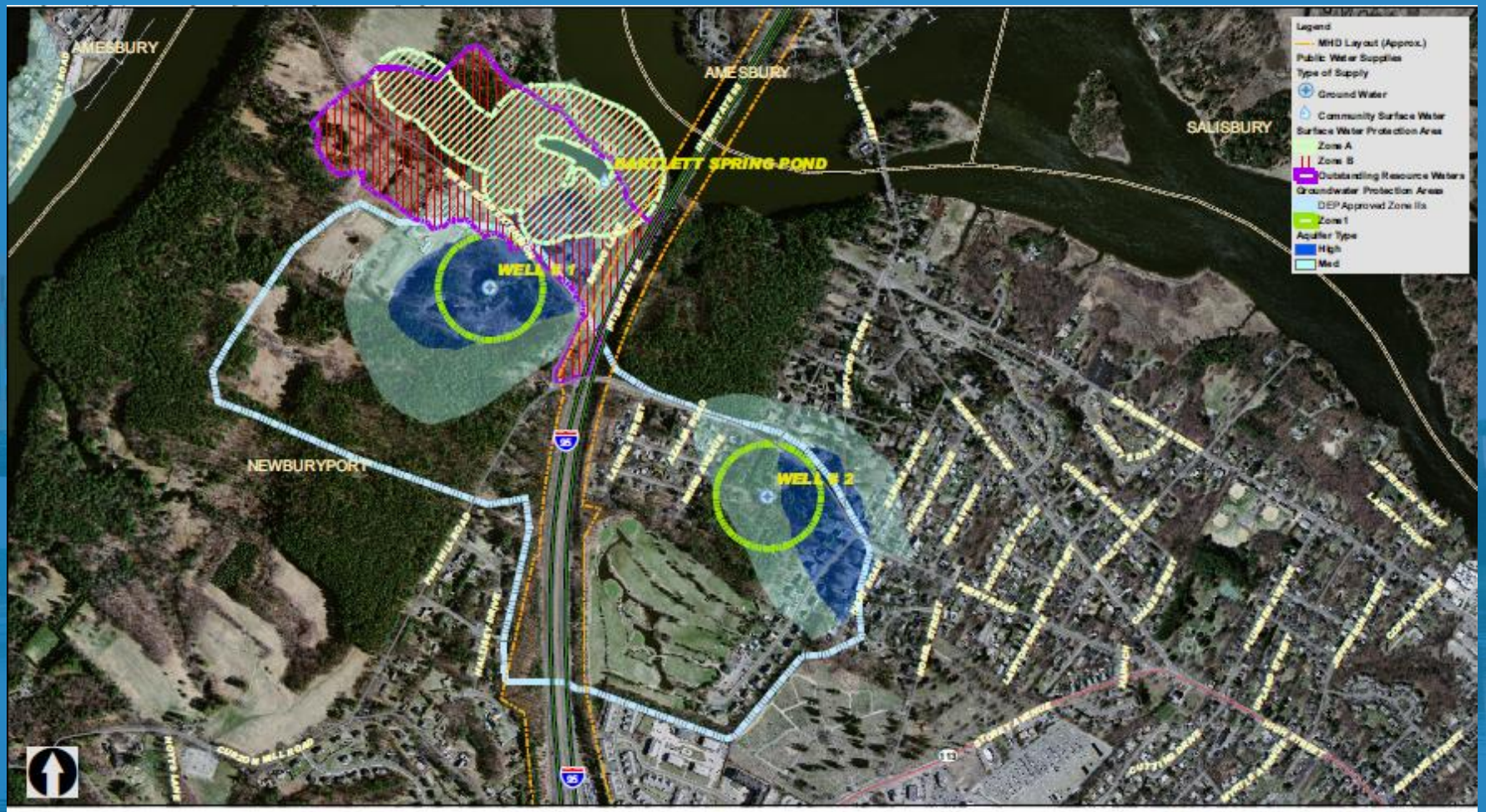


Whittier Bridge / I-95
Improvement Project

USGS PLAN
DRAINAGE ZONES

Figure GS-1

Water Supply Protection Zones



Base Map:
MassGIS April 2008 Airphoto

1 inch equals 700 feet

0 700 Feet

Note: Drinking Water
Data from MassGIS

Whittier Bridge/I-95 Improvement Project
Newburyport/Amesbury/Salisbury

Drinking Water
Resources (Newburyport) Figure 4-38

MASS HIGHWAY

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ACCELERATED BRIDGE PROGRAM

Possible Stormwater Treatment Area

Whittier Bridge/I-95 Improvement Project
Newburyport/Amesbury/Salisbury

Base Map:
MassGIS April 2008 Airphoto

0 400 Feet

Note: Drinking Water
Data from MassGIS

Possible Stormwater
Treatment Areas

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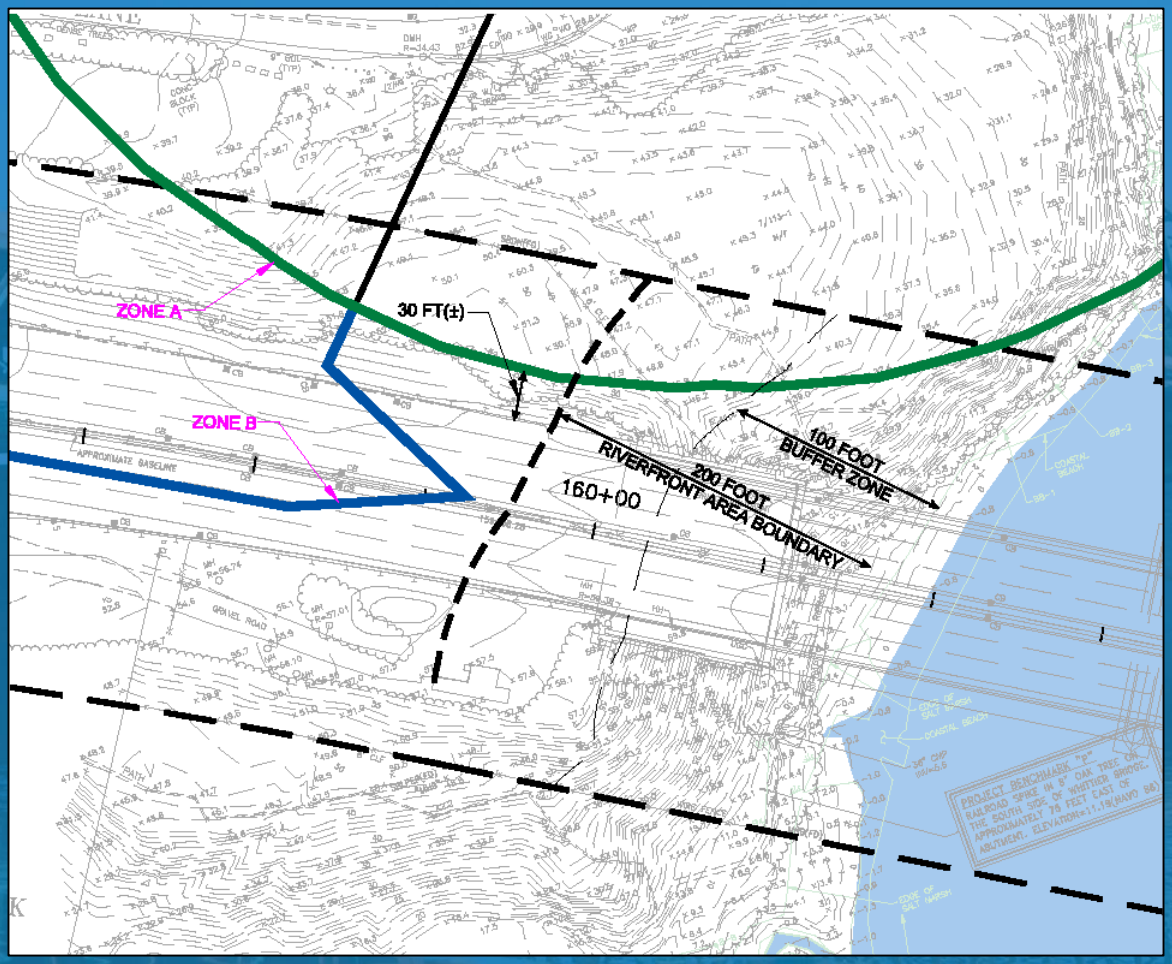
ACCELERATED BRIDGE PROGRAM

Newburyport Water Protection Zone A



Stormwater Treatment

- Possible Stormwater Treatment Easement

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ACCELERATED BRIDGE PROGRAM

Water Supply Protection Zones

Base Map:
MassGIS April 2008 Airphoto

1 inch equals 700 feet

0 700 Feet

Note: Drinking Water
Data from MassGIS

Whittier Bridge/I-95 Improvement Project
Newburyport/Amesbury/Salisbury

Drinking Water
Resources (Salisbury) Figure 4-39

MASS HIGHWAY

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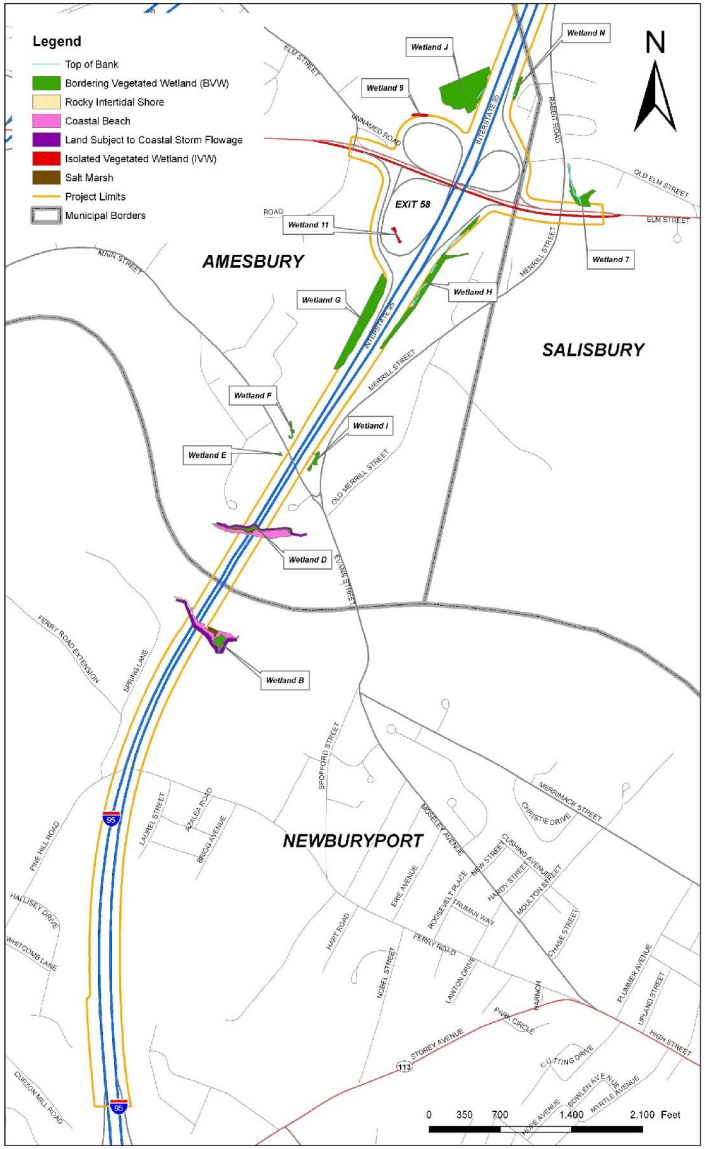
Southern Wetlands



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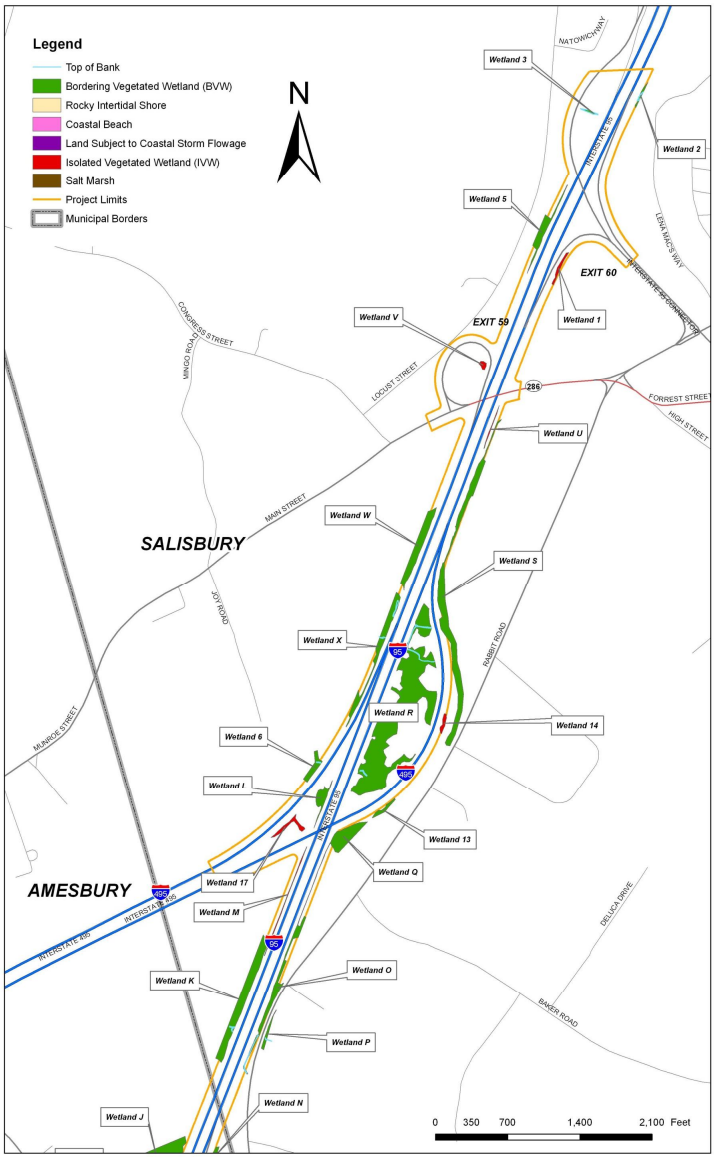
ACCELERATED BRIDGE PROGRAM

Northern Wetlands



massDOT Highway

ACCELERATED BRIDGE PROGRAM

Options Evaluation

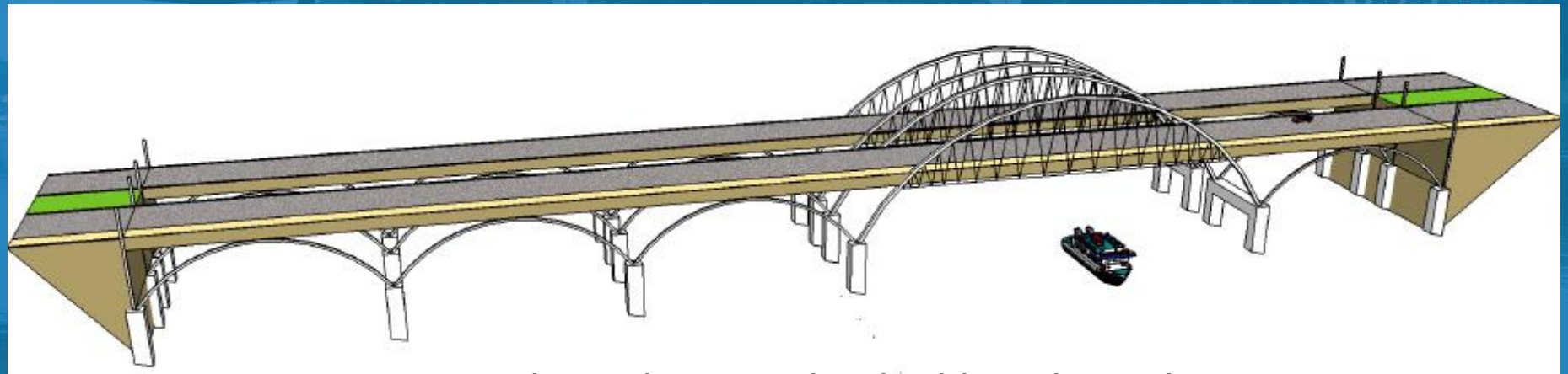
- Factors considered in rating preliminary alternatives :
  - -Purpose and Need
  - -Highway Configuration
  - -Bridge Configuration
  - -Traffic
  - -Right of Way
  - -Cost
  - -Construction
  - -Schedule
  - -Environmental

Preferred Crossing/ Alignment Alternative

- The Environmental Process will result in a Preferred Alternative that will be fully Documented and presented through the MEPA/NEPA Process in a combined
  - DEIR/EA in the Fall of 2010
  - Followed-up with FEIR and an Administrative Record in order to receive
    - NEPA Finding of No Significant Impact
    - MEPA Certificate

Preferred Bridge Alternative

- The MEPA/ NEPA Process will also result in the determination of a replacement Bridge



Schematic Example of Bridge Alternative

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Public Process

- Local Government Briefings Spring 2009
- MEPA Public Mtg June 18, 2009
- Stakeholders Mtg. December 7, 2009
- Public Mtg January 21, 2010
- Going Forward Public Mtgs Quarterly:
  1. January
  2. April
  3. July
  4. October

Project Schedule

- Started Environmental Study Options: Nov 2008
  - Data Acquisition; Field Studies, Survey, Research,…
- Started Public Outreach: March 2009
- Filed ENF: June 1, 2009
- Public Review of DEIR/EA: Fall 2010
- File FEIR: Spring 2011
- MEPA/NEPA Approvals: Summer 2011
- Design Public Hearing: Fall 2011
- Adv Design/Build contract: Spring 2012
- Construction Start: Winter 2013

Questions & Answers

www.mass.gov/mhd/whittierbridge

To submit comments or request more information, please contact:

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To be added to the project distribution database, please contact:

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